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Impulsive-Reflective Cognitive Style as a Factor Influencing Performance on the Dolch "Basic Sight Word Test." .

Alta Britton Palmer

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IMPULSIVE-REFLECTIVE COGNITIVE STYLE AS A
FACTOR INFLUENCING PERFORMANCE ON THE
DOLCH BASIC SIGHT WORD TEST

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Education

in

The Department of Education

by
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B.S., Louisiana State University, 1957
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TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	ii
LIST OF TABLES	vi
ABSTRACT	vii
Chapter	
1. INTRODUCTION	1
STATEMENT OF THE PROBLEM	5
QUESTIONS TO BE ANSWERED	6
DELIMITATIONS OF THE STUDY	6
IMPORTANCE OF THE STUDY.	8
DEFINITION OF TERMS.	9
SOURCES OF DATA.	10
EXPERIMENTAL PROCEDURES.	10
ORGANIZATION OF THE STUDY.	12
2. REVIEW OF RELATED LITERATURE	13
IMPORTANCE OF REFLECTIVE-IMPULSIVE BEHAVIOR AS A VARIABLE OF INDIVIDUALS.	13
BASIC ASSUMPTIONS UNDERLYING THE TERM COGNITIVE STYLE	16
INFLUENCE OF IMPULSIVE-REFLECTIVE COGNITIVE STYLE ON ORAL READING ERRORS	22
INFLUENCE OF REFLECTIVE-IMPULSIVE COGNITIVE TEMPO ON THE MASTERY OF A BASIC SIGHT VOCABULARY.	27

Chapter	Page
IMPLICATIONS OF RESEARCH FINDINGS FOR INSTRUCTIONAL PROCEDURES	29
3. PROCEDURE.	35
BACKGROUND	35
METHOD OF SAMPLE SELECTION	35
ADMINISTRATION OF THE TESTS.	38
TREATMENT OF THE DATA.	40
4. PRESENTATION AND ANALYSIS OF DATA.	42
5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS.	52
SUMMARY.	52
CONCLUSIONS.	53
RECOMMENDATIONS.	54
BIBLIOGRAPHY	56
APPENDIXES	61
A. LETTER OF PERMISSION	62
B. PARTICIPATING SCHOOLS, PRINCIPALS, AND CLASSES	63
C. DOLCH <u>BASIC SIGHT WORD TEST</u> , PART 1.	64
D. DOLCH <u>BASIC SIGHT WORD TEST</u> , PART 2.	66
E. LIST OF NON-PHONETIC WORDS FROM DOLCH <u>BASIC SIGHT WORD TEST</u>	68
F. INSTRUCTIONS FOR ADMINISTERING KAGAN <u>MATCHING FAMILIAR FIGURES TEST</u>	69
G. SAMPLE ITEMS FROM <u>MATCHING FAMILIAR FIGURES TEST</u>	71
H. SCORE SHEET.	72
VITA	73

LIST OF TABLES

Table	Page
1. Summary of Information Used to Select the Sample Population.	37
2. Differences between Boys and Girls when Compared on the Basis of Mean Scores of Total Errors made on the Dolch <u>Basic Sight Word Test</u>	43
3. Differences between Mean Scores of Reflective and Impulsive Students when Compared on the Total Errors made on the Dolch <u>Basic Sight Word Test</u>	43
4. Comparison of Mean Scores for Total Number of Errors made on the Dolch <u>Basic Sight Word Test</u> by all Reflective Girls and Boys and all Impulsive Girls and Boys	44
5. Mean Scores of Reflective and Impulsive Subjects when Compared on Number of Errors on Non-phonetic Words	46
6. Mean Scores of Reflective and Impulsive Subjects when Compared on Number of Errors on Phonetic Words	47
7. Mean Scores of Reflective and Impulsive Subjects when Compared on Number of Self-corrected Responses Without a Cue from the Examiner.	47
8. Mean Scores of Reflective and Impulsive Subjects when Compared on Number of Self-corrected Responses with a Cue from the Examiner.	48
9. Mean Scores of Reflective and Impulsive Subjects when Compared on Number of Words Which Could not be Read.	49

ABSTRACT

The purpose of this study was to analyze what effect, if any, a reflective or impulsive cognitive style would have on the number and types of errors made on the Dolch Basic Sight Word Test.

The criteria for sample selection were (1) that students were attending fourth grade classes in schools not designated as culturally disadvantaged, (2) that the students had not repeated a grade in school, (3) that students exhibited an average or above average level of verbal intelligence, and (4) that students could be classified as either reflective or impulsive in cognitive style.

The Peabody Picture Vocabulary Test, Form B, was used to assess verbal intelligence; the Dolch Basic Sight Word Test was administered and errors were recorded and categorized as (1) self-corrected without cue from the examiner, (2) self-corrected when the error was pointed out by the examiner, and (3) unable to correct, even after a cue from the examiner was given. The Kagan Matching Familiar Figures Test was given and after splitting the reaction time and number of errors at the median for this sample group, each student was classified as either reflective or impulsive in cognitive style. The sample did not include those

students who did not exhibit a definite cognitive style as defined by this instrument.

The research was limited to 133 fourth grade pupils in East Baton Rouge Parish. The sample population consisted of 40 impulsive boys, 31 impulsive girls, 29 reflective boys, and 33 reflective girls.

From the data compiled within the limitations of this study, the following conclusions may be drawn:

1. Sex differences seemed to play a much more significant role in the total number of oral reading errors made on the Dolch Basic Sight Word Test than did differences in cognitive style. Boys made more errors than girls.

2. There was no sex-by-style interaction shown when groups were compared on the basis of total oral reading errors on the Dolch Basic Sight Word Test.

3. Cognitive style was a significant factor in the number of oral reading errors categorized as self-corrections without a cue from the examiner. The reflective student made almost twice as many self-corrections without a cue from the examiner as did the impulsive student.

4. In comparing the mean scores of the reflective and impulsive students when based on the number of errors corrected with a cue from the examiner, as well as the number of words which could not be read even with a cue from the examiner, it was indicated that cognitive style did not act as a causative factor for performance.

5. When considering the errors made on the phonetic words from the Dolch Basic Sight Word Test, no significant difference between mean scores of the reflective and impulsive students was found.

6. When comparisons were made on the number of errors made on the non-phonetic words from the Dolch Basic Sight Word Test, there was some sex-by-style interaction shown. Impulsive boys made fewer errors than reflective boys. No significant difference was shown between the performances of the reflective and impulsive girls.

Chapter 1

INTRODUCTION

As a child is beginning to learn to read, one may observe many errors made when the student tries to read orally. One of the accepted methods of evaluating the student's progress is to have him read aloud so that the teacher can be made aware of the kinds of errors the child is making and subsequent instruction can be adjusted.

From the initial instruction in beginning reading, specific procedures are taught to the student so that he has at his command methods of deciphering words in print. Either the whole-word method (sight method) or many aspects of the phonics approach are taught to the student before he actually begins to read extensive passages in a contextual setting.

The phonics approach to teaching reading usually begins with an introduction to the names of the letters in the alphabet and a requirement that the student learn to visually discriminate the graphic symbols and to learn an auditory representation for these separate symbols as they occur in word forms. This is followed by an introduction of the various sounds represented by the vowels and the application of the most basic rules governing the use of these

particular sounds. Consonant blends, digraphs, and diphthongs are presented as separate word units and are incorporated as a part of word-analysis techniques to be used to figure out unknown words.

As words are presented in context situations, then context clues may be used to help unlock unknown words according to the way these words are used in sentences. And, as is the case of the colorfully illustrated basal readers, the students often refer to "picture clues" to help them decipher words which cannot be easily or readily "sounded out."

Several problems arise as students are introduced to the reading process. First, the beginning readers vary in their ability to visually discriminate letter forms. The letters b, d, and p are often confused. Once the words no and on are learned, they are often reversed. Second, there is often underdeveloped auditory discrimination of word parts or isolated phonetic sounds. Many students have problems with isolated sounds or they may even fail to discriminate the differences in words such as hat and had. Third, as the child enters beginning reading, he is introduced to a basic list of words which may be termed "service words." These words make up a large percentage of all the words the student will encounter in print throughout the elementary school years. It is usually accepted that a certain basic sight vocabulary consisting of these "service words" should be mastered by the end of the third grade and systematically

applied and used from that time. With the developed visual and auditory discrimination necessary for beginning reading, the developed sound-symbol relationships, and a complete understanding of how to use the total reading process, the mastery of any word list should present few problems.

This third factor, the frequently used service words, particularly those listed on the Dolch Basic Sight Word Test, was the source of interest for this study. Upon examination of a commonly used list of service words, one observed that many of these words did not fit into the neat, simple arrangement of reading as offered by a completely phonetic approach to word pronunciation. Many of the words on the basic sight word lists were not phonetic from an analytic viewpoint. The words could, would, and eight were only a few examples of such non-phonetic words found on the basic sight word lists.

Since there were non-phonetic words included on the list of words most frequently used, these words were usually taught as "sight words." This simply meant that the word was exposed to the child and he relied on his visual memory to remember the word. Many methods were used to try to help him remember these words. Flash cards were commonly used to present the sight words in isolation. The child was often encouraged to use the word in a contextual setting in order to conceive of the word as a useful part of the language.

With much concentrated effort on the part of the teacher and the student, many students learned the basic

sight words. Many parents spent long and tedious hours with their children as they tried to assist in the learning of the basic sight words. Parents related how difficult it was for the child to learn such words as what, which, where, want, that, this, these, and those, to list only a few difficult words. But somehow the students managed to learn the sight words well enough to recite them in isolated form and to use them with some degree of accuracy when they occurred in contextual settings.

As the child continued in his reading program and began to read orally from contextual material, the observant teacher noticed mistakes in orally reading the very words which the child labored to learn. If the teacher stopped the student and called his attention to the error, the student could usually self-correct and continue to read.

Why did the child misread the sight words or, for that matter, any other words which had been previously mastered? If the child had learned the word, why would he have misread it in usual oral reading activities? He may have substituted words which could just as easily be used without altering the meaning of the context and which fit into his own language patterns more naturally. Or, he may have had a cognitive style of such a nature that he simply guessed or responded to his first impulse.

If a child was predisposed toward an impulsive cognitive style and made errors which were not due to a lack of knowledge, but which were a product of an impulsive

reaction, it would seem that much time could have been put to more productive use than in "reteaching" the basic sight words. If the teacher administered the sight vocabulary test in such a way that the child's attention was immediately called to his error, and he corrected the error himself, it may have been assumed that he knew the word on the first attempt, but just impulsively responded with an incorrect response. Therefore, little could be gained from going through any further procedure to teach the student the word when he probably would continue to make errors reflecting his impulsive cognitive style rather than his actual lack of knowledge of the words from the basic sight vocabulary list.

There seemed to be some implication for the classroom teacher to adjust the methods of teaching to meet the needs of those students who exhibited an impulsive rather than a reflective style of responding to situations of high response uncertainty.

STATEMENT OF THE PROBLEM

The problem was to analyze the significant difference between the mean scores of those students classified as reflective and those students classified as impulsive, when comparisons were based on the number of errors on the initial trial of reading each word listed on the Dolch Basic Sight Word Test.

QUESTIONS TO BE ANSWERED

When comparisons were based on errors on initial trial for each word on the Dolch Basic Sight Word Test, was there a significant difference between:

1. The mean scores made by all boys tested and all girls tested?
2. The mean scores made by all reflective students and all impulsive students?
3. The mean scores made by the reflective boys and the reflective girls?
4. The mean scores made by the impulsive boys and the impulsive girls?
5. The mean scores made by the reflective boys and the impulsive boys?
6. The mean scores made by the reflective girls and the impulsive girls?

Was there a significant difference between the mean scores of the impulsive students and the mean scores of the reflective students when compared according to:

1. Number of errors made on non-phonetic words from the Dolch Basic Sight Word Test?
2. Number of errors made on phonetic words from the Dolch Basic Sight Word Test?
3. Number of self-corrections made when words were pronounced incorrectly upon first trial?
4. Number of self-corrections made upon cue from the examiner?

The above questions were tested at the .05 level of confidence, based on an analysis of variance.

DELIMITATIONS OF THE STUDY

Approximately 100 girls and 100 boys who had not repeated any grade and who were currently enrolled in the fourth grade and who were of average intelligence or above, comprised the population for this study. These students were attending classes in public schools which had not been designated as culturally disadvantaged. The schools were in the East Baton Rouge Parish, Louisiana, Public School System. Testing began early in the 1974-1975 school year.

The Peabody Picture Vocabulary Test was administered to each subject. This test is designed to assess the verbal intelligence level of boys and girls from age three years to 17 years, five months. According to the test manual, the average range of verbal intelligence is from 90 to 109. For the purposes of this study, only students who scored 90 or above on the verbal intelligence test, were included in the sample population. No upper range of performance on this assessment was set.

The schools from which subjects were drawn were not designated as in culturally disadvantaged environments; therefore it seemed that culture background would not be a principal factor influencing the students' performance on the Peabody Picture Vocabulary Test.

The Matching Familiar Figures Test developed by Jerome Kagan is an experimental instrument designed to give an indication of a student's response time and response accuracy, therefore classifying children's cognitive tempo

or style. There are 12 items in this test. Each item includes a line drawing of a familiar object as a standard and six response choices, one of which is exactly like the standard and the remaining five very similar to it. If the child made his first selection quickly when attempting to choose the matching response and also if he made several incorrect selections before he determined the correct response, he was classified as impulsive. If he deliberated longer before making his first selection and if he made fewer incorrect selections, he was classified as reflective.

The Dolch Basic Sight Word Test is comprised of 220 of the most commonly used words in the usual reading material provided for the first three grades. According to E. W. Dolch (1955:37), as soon as a student had mastered the sight vocabulary, he would be able to read with them alone, much of the material in the lower elementary reading books. With the help of the nouns he knew, he would be able to read at the third grade level. These words should be recognized at sight, that is, the student should not expect to "sound out" or otherwise hesitate on these crucial service words.

IMPORTANCE OF THE STUDY

Because much emphasis has been placed on the development of a sight vocabulary, the knowledge of the relationship between cognitive style and performance on oral reading tasks may be of significant help to the classroom teacher. The techniques of teaching could be altered to better suit

the cognitive style of the learner, thus more fully providing for the individual differences of the students. The diagnostic testing program could be expanded to include an assessment of cognitive style and add valuable insight into certain characteristics of the students.

DEFINITION OF TERMS

Cognitive style. The manner in which students seem to respond to information processing is referred to as cognitive style. This response may be global, characterized by the ability to scan for visual stimuli, or it may be analytical and a more detailed way of perceiving and reacting to visual stimuli. The cognitive style may also be characterized as impulsive or reflective. The works of Jerome Kagan were the bases for this definition.

Basic sight vocabulary. This reading vocabulary list consists of those words which may or may not be phonetic in sound-symbol relationship, but which make up a great portion of primary reading material. For this study, the author used the 220 words listed on the Dolch Basic Sight Word Test. These words should be recognized upon sight.

Reflection-impulsivity. This dimension describes the child's consistent tendency to react with a slow or a fast response time in problem situations with high response uncertainty. Research shows that this dimension is

stable over extended periods of time, that impulsivity decreases with age, that the tendency toward either reflection or impulsivity is general across varied task situations, and that the dimension is linked to some fundamental aspect of the child's personality organization. This definition reflected the ideas set forth by Jerome Kagan.

Culturally disadvantaged school. Any school which was receiving financial assistance in the form of special federal funds (Title I) used for the purpose of purchasing materials of instruction and providing special personnel was designated as culturally disadvantaged.

SOURCES OF DATA

The performance of the sample population on the Peabody Picture Vocabulary Test, the Matching Familiar Figures Test, and the Basic Sight Word Test were recorded and presented as part of the study.

EXPERIMENTAL PROCEDURES

1. Selection of sample. A list of schools in East Baton Rouge Parish which had not been designated as culturally disadvantaged was obtained, and schools for the study were selected by random choice. Selected children in fourth grade classes were used in the study.

All fourth grade children who had not been retained were administered the Peabody Picture Vocabulary Test. The test was administered in the classroom setting by the

researcher. Scoring and recording of scores was also done by the researcher.

Only those students who scored at or above the average range of verbal intelligence as defined in the technical manual accompanying the Peabody Picture Vocabulary Test, were included in this study.

2. Administration of the tests. The Matching Familiar Figures Test was administered individually to the sample population with records made of the response time and number of errors for each subject. The distribution of Matching Familiar Figures errors for all boys was split at the median into high and low groups. Similarly, the distribution of Matching Familiar Figures response time was split at the median into fast and slow groups. The same procedure was followed for the girls. The child who scored above the median on errors and below the median on response time (fast response time) was classified as impulsive. The child below the median on errors and above the median on response time (slow response time) was classified as reflective.

The Dolch Basic Sight Word Test was administered individually to the sample population. Each of the 220 words from the test was scored on the basis of one of the following responses:

1. Correct response.
2. Incorrect response, but self-corrected.

3. Incorrect response, but self-corrected when a cue was provided by the examiner.

4. Incorrect response which could not be corrected by the subject.

A total number of responses falling within each of these categories was compiled for each subject. The number of phonetic words and the number of non-phonetic words from the Dolch Basic Sight Word Test which were misread on first trial was tabulated for each student.

3. Treatment of data. Using an analysis of variance, significant differences between mean scores were shown and reported to answer the questions as previously stated. To aid in this endeavor, the data collected were compiled, coded, and transferred to appropriate data cards for computer analysis.

4. All data were reported in tabular form.

5. The data were summarized and conclusions were drawn from these findings.

ORGANIZATION OF THE STUDY

The remainder of this study is organized into four chapters. A review of related literature is summarized in Chapter Two; the experimental procedures and sources of data are described in Chapter Three, and Chapter Four is the presentation and analysis of the data collected. Chapter Five states summaries, conclusions, and recommendations for future study related to this research.

Chapter 2

REVIEW OF RELATED LITERATURE

This chapter is limited to a review of literature regarding (1) the importance of reflective-impulsive behavior as a variable in individuals, (2) some basic premises underlying the term, cognitive style, (3) the influence of impulsive-reflective cognitive styles on oral reading errors, (4) the influence of impulsive-reflective cognitive style on the mastery of a basic sight vocabulary, and (5) implications of research findings for instructional procedures.

IMPORTANCE OF REFLECTIVE-IMPULSIVE BEHAVIOR AS A VARIABLE OF INDIVIDUALS

Teachers know that children differ from one another both physically and mentally. Children labeled bright and dull, aggressive and shy, are seated side by side. But some subtle differences which have immediate effects on the effectiveness of instruction often go unnoticed.

Jerome Kagan and associates (Kagan, 1964:78) investigated one difference demonstrating that many children are extreme examples of reflective-impulsive behavior.

The impulsive child shouted the first answer that came to mind. If the answer was wrong, as it often was, he could quickly supply an alternative. Being first to answer seemed more important than the appropriateness of the answer (Beattie, 1972:29).

Recent educational innovations failed to examine carefully this inter-individual variability of the learners. Rarely have educators considered the many information-processing variables found among the pupils who will be using their programs. The construct of cognitive style could contribute to the understanding of individual differences in the processing of information (Coop, 1971:155).

Messick (1963:347) felt that cognitive styles would moderate the learning that resulted from educational treatments. Cognitive style might enter into the evaluation of the education procedures either by being a consequence of a procedure or as a factor in its effectiveness.

The dimensions of reflection-impulsivity have received much attention in recent years. The educational implications of recognizing a child's conceptual tempo made attempts at early classification pertinent. It was found that there existed a true predisposition or style--whether constitutional or learned early in life--that was general, distinctive, and individualistic, and that led a child to respond with similar tempo to cognitive and motor tasks (Harrison, 1972:657). Furthermore, Ault (1973:264) stated that there was a strong cognitive development component

underlying reflection-impulsivity, especially at earlier grades.

Katz (1971:745) stated that data from her study suggested that tempo was relevant as an explanatory construct to behavioral differences which seem superficially unrelated to tempo. The data suggested that tempo effects were more pervasive than was generally assumed and affect even the slightest and simplest perceptual problems.

Meichenbaum (1969:786) summarized certain findings of Jerome Kagan when he stated that a developmental trend of increased decision time from grades one through four had been found. It was also found that impulsive children, as compared with reflective children, behaved differently on such tasks as inductive reasoning, reading, and serial learning. The accumulative evidence suggested that conceptual tempo or reflection-impulsivity was an important dimension of cognitive development.

The considerable stress in recent years upon the development of educational practices which took into consideration individual differences within a single learning environment has posed an important task for educators and psychologists. This problem has been described as the need to diagnose the "entering state" of the learner which would determine long-term characteristics that are related to adaptive educational alternatives (Weintraub, 1968).

The extent to which a marked predisposition towards one or another style of thinking blocked differential

adoption of appropriate sets, was largely speculative, for there were no convincing empirical data relating predisposition to a style of thinking with the characteristics of a learning situation or with educational objectives. Potentially, research into cognitive styles was as profitable to the guidance of learning as studies of any other individual difference in cognition (Satterly, 1971:300).

The studies cited indicated the value of considering the student's style of functioning if the teachers are to actually provide for the differences of each student.

BASIC ASSUMPTIONS UNDERLYING THE TERM COGNITIVE STYLE

Cognitive style according to Blosser (1972), constituted one of the strata of the educational sciences, a unique conceptual framework for the applied field of education. The term cognitive style referred to the manner in which an individual derived meaning and acquired knowledge in the context of his symbolic orientation, i.e., the kinds of symbols he tended to use most in acquiring meaning.

The term, cognitive style, has been used most frequently to denote consistencies in individual modes of functioning in a variety of behavioral situations (Coop, 1971:152).

Fredrick (1970:668) interpreted the work of Kagan (1964:78) when he stated that Kagan found that some children had a preference for grouping objects on an analytical basis.

Two cognitive dispositions seemed to underlie such analytic grouping. One was the tendency to reflect over alternative solutions or classifications, and the other was the tendency to perceive and analyze the array into component parts. Other children grouped objects on the basis of either a wholistic relationship between the objects or a rapid, global inference. The dimension of being reflective versus acting impulsively was found to be a stable individual characteristic by the first grade.

Messick (1963:348) viewed cognitive styles as information processing habits that functioned across a variety of content areas. He attempted to devise new tests and analyzed existing tests to measure exactly the factors involved in cognitive style. There appeared to be many styles, or information processing habits, that could be reliably and uniquely measured. Ault (1973:265) suggested that various cognitive styles involved differences in the strategies used to solve problems. The strategy differences led to more efficient performance, depending on the structure of the task, and they were indicative of different levels of cognitive development.

The primary operational index of the reflection-impulsivity dimension variable was the response latency of the first response in complex visual discrimination tasks in which a standard stimulus and a fixed set of response alternatives were presented, and the response alternative that matched the standard was not immediately obvious. The

latency and error scores were used as an index of conceptual tempo to classify children as reflective (long response latency, few errors) or impulsive (short latency period, many errors). The response time variable was viewed as having intra-individual stability over increasing periods of time, intertask generality, and linear relationship with age. The error variable appeared to be more complex and was related both to response time and to multiple factors associated with verbal skills (Harrison, 1972:659).

Kagan (1965:154), one authority who has reported a number of studies of cognitive style, defined the dimension of reflection-impulsivity in several ways. One definition by Kagan was:

This disposition is defined as the tendency to reflect over alternate-solution possibilities, in contrast with the tendency to make an impulsive selection of a solution, in problems with high response uncertainty.

Kagan (1965:154) further indicated that a series of investigations had demonstrated the temporal stability and inter-task generality of a tendency toward fast or slow decision times to problems with high response uncertainty. Some children impulsively reported the first hypothesis that occurred to them, and the response was often incorrect. The reflective child, on the other hand, delayed a long time before reporting a solution and was usually correct. The reflective child wanted to avoid making an error and inhibited potentially incorrect hypotheses. The impulsive child seemed minimally concerned about mistakes and made his

decisions quickly (Kagan, 1966b:584).

Egeland (1974:166) conducted a study with impulsive children who were taught to use efficient search strategies and scanning techniques. He expanded the ideas of Siegelman (1969:1213) and Drake (1970:202) into specific training materials used to try to improve search strategies. Findings related to the present study were those regarding the visual search strategies employed by impulsive and reflective children. Impulsive subjects ignored two and one-half times as many alternatives on the Matching Familiar Figures Test as did reflective subjects, and devoted proportionally more time to looking at the most observed alternatives and the alternative finally chosen. Impulsive subjects appeared to locate one alternative, spend a disproportionate amount of time looking at it, and then selected that alternative as the correct one without considering the others. Reflective subjects differentiated the components of the alternative, compared these components, and consulted the standard to determine if the property was the same or different from that of the standard. Impulsive subjects, rather than break the stimulus down into component parts, compared the alternative globally with the standard and attempted to eliminate or confirm it on a global basis.

Kagan (1966c:17) reported that some children and adults selected and reported solution hypotheses quickly and with minimal consideration for their probable accuracy.

Other children, of equal intelligence, took more time to decide about the validity of solutions. The former group was called impulsive, the latter, reflective.

Meichenbaum (1969:790) simplified Kagan's definitions of terms when he stated: "The reflection-impulsivity dimension described a consistent tendency to display slow or fast decision times in problem situations where the subject selected one hypothesis from several possibilities."

Mann (1973:274) conducted a study which revealed that the dimension of reflection-impulsivity in problem solving had a systematic relationship to caution-haste in decision making for children age six to eight years. He further stated that it would seem that during middle childhood, reflectivity in problem solving became quite closely interrelated with caution in decision making. His findings suggested that as a trait reflectivity more strongly governed time taken to make a choice than the content or quality of that choice.

A summation of definitions of cognitive style was described by Satterly (1971:295). He stated that all definitions of cognitive style suggested that people behave in a typical way across a variety of tasks and that such personal consistencies remained comparatively stable over a period of time.

Witkin (1965:27) gave the following definition:

Cognitive styles are manifestations in the cognitive sphere of still broader dimensions of personal functioning which cut across diverse

psychological areas . . . and represent different ways of cutting the personality "pie" from those traditionally used.

Wineman (1971:74) stated that cognitive styles were measurable when he pointed out that cognitive styles were readily identifiable and measurable dimensions of behavior which reflected consistent and predictable ways in which individuals tended to cope with reality.

Quality of performance was a factor which seemed to be affected by the reflective-impulsive or analytic or non-analytic cognitive styles. Given the obtained correlation between response latency and analytic responding and the effect response speed manipulation was found to have on analytic responding, it appeared that speed of performance might be an important factor in accounting for performance differences between analytic and nonanalytic subjects (Zelniker, 1974:779).

It was in the area of measurement of the cognitive styles of impulsivity-reflection that Kagan (1964:80) made a significant contribution. His method of determining the presence of these characteristics in an individual was centered around the administration of a test which he and his co-workers devised. The test was called the Matching Familiar Figures Test, and it was designed in such a way that the subjects looked at a stimulus drawing and then found an identical drawing from a group of several alternatives. The measure of cognitive style was made on the basis of response time and number of errors made by the subjects. If the child

made his first selection quickly when attempting to choose the matching response and also if he made several incorrect selections before he determined the correct response, he was classified as impulsive. If he deliberated longer before making his first selection and if he made fewer incorrect selections, he was classified as reflective (Hood, 1973).

INFLUENCE OF IMPULSIVE-REFLECTIVE COGNITIVE STYLE ON ORAL READING ERRORS

Davy (1971) conducted a study in which 38 fourth grade boys from white, upper middle class, suburban homes were tested for oral reading errors. The primary purpose of the study was to investigate the oral reading strategies employed by these subjects who differed in reading achievement and cognitive styles. Oral reading errors were linguistically analyzed according to 28 factors and differences of performance were found to be significant enough to state that cognitive styles were implicated in reading underachievement as reflected through unsuccessful and inefficient cue selection and hypotheses testing strategies in oral reading. The use of detailed linguistic analysis of oral reading errors contributed to the notion that this procedure was a valuable technique for researching the reading process within a language centered framework.

From a study of the effect of impulsive-reflective cognitive style on oral reading errors, Hood stated that a child who paid closer attention to graphic cues and who was

likely to correct miscues when they were semantically inappropriate seemed to be behaving impulsively (Hood, 1973:14).

Jerome Kagan (1966a:609) tested the hypothesis that children who were characteristically reflective would commit fewer word-recognition errors than impulsive children. He attempted to determine if a measure of reflection-impulsivity used in first grade would be prognostic of reading performance one year later. To evaluate the influence of a visually analytic attitude upon recognition errors in reading words, and to determine whether children who analyzed designs into their separate parts would be advanced over their peers in reading English words, were two other objectives of this study.

Data obtained from many groups of children in grades one through four indicated that response latencies increased and recognition errors decreased with age. At every age there were consistently high negative correlations between response latency and frequency of recognition errors in discrimination tasks. The impulsive child who made fast decisions always made more errors than the reflective child who had long decision times.

Lipton (1972:760) summarized his point of view concerning oral reading errors. He stated that the act of reading required the perception of printed symbols, the integration of these symbols within the framework of the language of the reader and ultimately the acquisition of

meaning from these symbols. As children perceived these symbols, they brought to these stimuli their knowledge of sound-symbol relationships, their language development and their emotional responses to the reading process and to the materials they were reading.

The act of calling out words in an oral reading situation then was found by Lipton (1972:761) to be more complex than was often considered. Many reading specialists and teachers responded to the child's miscalling of words in their oral reading as though each miscalled word were a result of only faulty or inadequate knowledge of sound-symbol relationships.

The child may miscall as well as mispronounce words for a variety of emotional reasons. Saying went for want, what for that, and other similar examples, may result from the child not looking very closely at the words and not paying attention to the message. The child in effect was misperceiving because he was avoiding looking at the word or words (Lipton, 1972:762).

Hirschfield (1965:117) noted that children misperceive words in other ways as a result of impulsive or avoidance behavior which in turn may be due to fear of failure, hostility, or unmet depending needs.

The diversity of causes of word miscalling or misperceptions does not mean that there are not some children who just do not know the sounds that are expected from certain phonemic-graphemic correspondences. The variety of

learning styles and reading behavior patterns were reflected in the possible response to these unknown stimuli. Many children were independent and assertive and liked to try new words. They learned new words by using inference skills. Other children preferred to ask for help. Others needed neither the cues on the page nor the help of the adult. These students merely continued impulsively to finish a task with usually unsuccessful results (Lipton, 1972:761).

Roettger (1971) conducted a study with 114 kindergarten children in which she found that reflective children were more successful on word discrimination tasks both before and after training than were the impulsive children.

A recent study by Shove (1971) stated that the Matching Familiar Figures error score was a far better discriminator of impulsivity than response time, and was significantly related to achievement. The lower achieving group of subjects showed a more impulsive orientation than did the adequate achievers.

The data further suggested that it was not so much a deficit in discreet skills areas that separated low from adequate achievers, but an inability to organize or integrate these skills into the complex functions required by academic tasks. It was concluded that adequate achievement involves a complex inter-mixture of cognitive-perceptual-conceptual and emotional factors and their integration as well as consideration of attention. These statements it would seem,

could be applied to the skills of decoding words and subsequently to oral reading errors.

Although the literature was limited, the author found some studies concerned specifically with the relation of cognitive style to oral reading errors. The evidence indicated that there was a significant relationship involved between these factors.

Watching and listening to children read orally was a source for the teacher to discover individual students' insights into the reading process if the teacher viewed his role in the classroom as a researcher and diagnostician in addition to the more traditional teacher's roles.

The writer felt that miscues must be looked at not as mistakes which were bad and should necessarily be eradicated, but as overt behavior which unlocked aspects of intellectual processing. Oral reading and silent reading were viewed as separate processes. However, oral reading provided a continuous window into the reading process and the cognitive processes taking place within children as they read.

If teachers were able to listen to the child's reading and discovered why the child made certain miscues, they were more able to diagnose children's reading problems with greater insight and therefore did a more thorough job of teaching the reading skills (Goodman, 1970:455).

Beattie (1972:29) summarized his research findings in the following statements:

1. Reflection or impulsivity is constant within each child. An impulsive child will be impulsive in all areas. No one yet knows whether or not this behavior is learned. However, some children act impulsively at very young ages.

2. There seems to be no correlation between verbal intelligence and impulsivity. The impulsive child may be bright or slow. Given an easy problem, a bright impulsive child will answer immediately and correctly. A more difficult problem will elicit an immediate answer, but it may be incorrect.

3. Impulsive children can be trained to hesitate before answering, but their answers will not necessarily be more correct. The impulsive child does not appear to use the pause in the same way as the reflective child.

4. Impulsive children can be taught to use the pause for obtaining more information.

Butter (1971) found that impulsives were found to ignore more than twice the number of alternatives as reflectives. Reflectives were found to sample more of a total array and to devote more time to the alternatives.

INFLUENCE OF REFLECTIVE-IMPULSIVE COGNITIVE TEMPO ON THE MASTERY OF A BASIC SIGHT VOCABULARY

Hood (1973) and associates reported a study of the relation of reflective-impulsive cognitive styles to the word recognition abilities of a selected group of 22 impulsive and 22 reflective children from middle socio-economic environments. These children were tested on the McCracken Standard Reading Inventory word lists. The findings indicated that of the reflective children there were 59 percent who were able to pass word lists above second grade level, while only 32 percent of the impulsive children

were able to do so.

Smith (1965:171) used the term, sight words, to denote those words that children learned to recognize by sight without aid of any of the other identification techniques. These words are the ones which cause many frustrating experiences because they did not follow the usual phonetic principles for word analysis. Underdeveloped readers, and even average readers in the second and third grades often could not "see the forest for the trees," because they were unable to recognize many of these common words. In such cases concentrated effort to fix recognition of these words by sight "opened up" the pages of print for them immediately. Under these conditions teaching such words by sight was justifiable at higher levels as well as at the beginning stage.

According to Dolch (1950:8), his list of 220 words made up over half of the material in the primary reading books. These words include common verbs, prepositions, conjunctions, adverbs, adjectives, and pronouns. As soon as a student had mastered this sight vocabulary, he was able to read with them alone, two-thirds of all third grade reading text. With the help of the learned nouns, he was able to do ordinary third grade reading.

Zintz (1966) described the Dolch Basic Sight Words as a short list of words which a child should recognize at sight, that is, he should not expect to sound out or otherwise hesitate on these crucial words. These words were the

commonest words used in all reading and writing, making up over half of all the running words children read in their elementary textbooks.

Definitions of the term, sight words, as stated by Smith (1965), Dolch (1955), and Zintz (1966) seemed to be in agreement. These words were those which must be at the automatic command of the child as he meets words in print. The importance of the mastery of these words was also a point of apparent agreement by these three authors. If the idea of the mastery of a list of sight words was worthy of inclusion in a program of reading instruction, from the studies cited in the literature, it became important that there would be some value in considering the cognitive style of the student if we were to most efficiently help him master such an important list of words, and if expectations were set at a realistic level for each student.

IMPLICATIONS OF RESEARCH FINDINGS FOR INSTRUCTIONAL PROCEDURES

The practical application of research findings cannot be over stressed if the research were moved from the theoretical to practical applications with students. Most of the studies reviewed in the literature gave indications or implications for practical use in working with children.

Annesley (1971) concluded that the application of a cognitive style model to the educational process could be of significance.

Some implications for teaching were listed by Beattie (1972:29). He recommended that the symptoms of impulsivity should be recognized not as problem behavior, but as indicators of individual differences. He contended that it was not sufficient to admonish impulsive children to think before answering. They must be taught to use the pause to ask questions and get more information. Impulsive and reflective children required different instructional strategies. The impulsive child benefited more than the reflective child from active involvement in learning by discovery. In this way, interaction of intuition and alternative hypotheses were maximized. Although reflective behavior was viewed as desirable, standardized and teacher-prepared tests where time was an important factor discriminated against the child who was reflective in favor of the impulsive child.

The construct of conceptual tempo indicated that the pacing of the learning situation by the teacher was a crucial variable that affected student performance. The impulsive teacher tended to overwhelm the reflective student with a barrage of information without being conscious of doing so. Similarly, the numerous speed drills and games that call for rapid information processing which were found in many elementary school classrooms placed the reflective learner in a disadvantaged position. Conversely, the impulsive student was often bored in a classroom situation geared to facilitate the learning of the reflective student.

The research by Coop (1971:157) on cognitive styles suggested that there was tremendous variability in the way in which individual processing of information took place, and hence in the manner in which individuals approached instructional programs. Such research indicated the need for those researchers, teachers, and curriculum planners involved in the design of learning programs for individual student.

Fredrick (1970:670) indicated that instruction can be designed to develop certain cognitive styles. He pointed to Kagan's work in showing that cognitive styles were developed early and guided the students in many situations. Ways of accommodating the various styles have been suggested by Fredrick. Impulsive children, especially boys, should perhaps be taught to read in groups led by an experienced, reflective teacher. A phonics approach may be effective with the analytic and reflective beginning readers, while a whole-word approach may be superior with those who are impulsive.

Fredrick further stated that presenting and seeking information in various ways and perhaps in several ways, teachers may increase the range of students of varying styles who "get the point." Variety in presentation might free the teacher from utilizing a cognitive style which may be unlike that of most of his students.

Heider (1971:1276) described one practical implication of sensitivity to cognitive style as that of direct instruction in methods of information processing and/or

structuring tasks to force desirable strategies in guiding the student who reacts impulsively. Heider continued by pointing out that with regard to theory, findings supported the position that individual differences in habitual strategies of processing information and solving problems were of importance in the dynamics of conceptual tempo.

Egeland (1974:170) reported that impulsive children can be taught to alter the way in which they process information and solve problems. Modification of impulsive behavior would, then, appear to have significant educational value.

Kagan (1966d:238) said that many teachers interpreted an incorrect inference as indicative of insufficient knowledge and usually did not appreciate the role of an impulsive attitude in determining the quality of the inferential process. The value of training the child in reflection when facts and rules are introduced in order to facilitate the general quality of his performance was also stated by Kagan.

Kagan also suggested that a diagnostic evaluation of children should include an assessment of the dimensions of reflection-impulsivity. Remedial work should incorporate specific training in reflection in cases where it seemed appropriate. Teaching the characteristics common to reflection in kindergarten reading readiness programs seemed valuable (Kagan, 1966b:585).

Lipton (1972:762) stated that the alert teacher

learned from each child about his style and pattern of responding and would be able to determine appropriate reactions to the child's reading behavior. There seemed to be no one best answer for the teacher in dealing with word calling errors. Each teacher should develop a sensitivity to each child's reading behavior. She should be able to recognize the possible divergencies in responses, must diagnose them carefully and reflectively, and then determine which of the several alternative methods to use with the individual child.

The fact that the impulsive child is less able to manipulate perceptual stimuli might explain the inability of researchers to modify an impulsive tempo by lengthening the response time. The child who is not yet able to dissect figures and transport them over a distance is not helped by enforced prolonging of scanning time, since he is unaware of what is expected in the extra time.

Results seem to indicate that the usable information reaching the reflective child appears not only different in quantity, but in quality from that immediately useful to the impulsive child (Shine, 1971).

Odom (1971:883) proposed that the identification of cognitive styles before instruction in reading began proved useful in curriculum planning.

Hemry (1973:657) showed that reflective subjects performed better in several situations regarding a discrimination learning task and this was consistent with other research showing that this trait was consistent in various tasks. These facts supported the importance of the idea of identifying impulsive children and helping them to learn more efficient means of problem solving.

SUMMARY

The review of literature for this study showed that there existed a specific variable in individuals which was defined as reflective or impulsive behavior. The term cognitive style had been reduced to an accepted definition by several authors whose studies were based on the premise of cognitive style as a factor influencing certain behaviors. The influence of cognitive style on oral reading errors was also reported in the literature quoted for this study. The part which a reflective or impulsive cognitive style plays in the mastery of a sight vocabulary was also cited. Selected implications of research findings for instructional procedures were reported.

Chapter 3

PROCEDURE

BACKGROUND

The setting for this research study was in four elementary schools located within East Baton Rouge Parish and under the direct supervision of the East Baton Rouge Parish School Board System, Baton Rouge, Louisiana. These schools were within areas of the Baton Rouge community which were of such a socioeconomic composition that the schools were not classified as Title I, culturally disadvantaged, schools. Written permission was granted for the researcher to conduct the study. (See Appendix A.) The four elementary schools participating in the study were Park Forest Elementary School, Lanier Elementary School, Winbourne Elementary School, and Dalton Elementary School. (See Appendix B.)

METHOD OF SAMPLE SELECTION

The basic requirements for a child to be included in the sample population were (1) that he had not repeated a grade in school, (2) that he scored 90 or above on the Peabody Picture Vocabulary Test, Form B, and (3) that he

could be specifically classified as reflective or impulsive in cognitive style as determined by his performance on the Kagan Matching Familiar Figures Test.

The researcher conducted the testing with each individual child in the fourth grade classes at the above-listed schools, administering the Peabody Picture Vocabulary Test, Form B, the Dolch Basic Sight Word Test (see Appendixes C and D), and the Kagan Matching Familiar Figures Test (see Appendixes F, G, and H), in that order. Only those students who scored on or above 90 I.Q. on the Peabody Picture Vocabulary Test, Form B, were allowed to take the other tests in the battery.

A total of 248 students were tested. Of the 248, 191 scored within the established intelligence range. Of the 191 with average verbal intelligence, 100 were boys and 91 were girls.

The necessity of exhibiting a specific cognitive style, either reflective or impulsive, was a further requirement for inclusion in the final groups from which statistics were calculated. After the administration of the Matching Familiar Figures Test to the 191 students, 133 were classified as either specifically reflective or specifically impulsive. The average response latency time for 189 students was 8.4 seconds. The average number of errors for the 189 students was 14.0. Students who were either fast-accurate or slow-inaccurate in responses were excluded from the study.

In the final sample, 133 students were selected for this study. There were 69 boys and 64 girls in the population sample. There were 71 impulsive and 62 reflective students classified according to performance on the Matching Familiar Figures Test. Forty boys were classified as impulsive and 29 were reflective. Thirty-one girls were found to be impulsive and 33 were reflective.

In Table 1, this population was further identified.

Table 1
Summary of Information Used to Select
the Sample Population

Total Students Tested.	248
Students scoring above 90 on <u>Peabody</u> <u>Picture Vocabulary Test</u>	189
Average response latency (in seconds) on <u>Matching Familiar Figures Test</u> for 189 students. . .	8.4
Average number of errors on <u>Matching Familiar</u> <u>Figures Test</u> for 189 students.	14.0
Total subjects classed as impulsive.	71
Total subjects classed as reflective	62
Total subjects not exhibiting either reflective or impulsive cognitive style	56
Impulsive boys	40
Impulsive girls.	31
Reflective boys.	29
Reflective girls	33
Total sample for study	133

ADMINISTRATION OF THE TESTS

Beginning in October, 1974, and continuing through December, 1974, the researcher administered the Peabody Picture Vocabulary Test, Form B, the Dolch Basic Sight Word Test, and the Kagan Matching Familiar Figures Test on an individual basis to the students in the fourth grade classes in the selected schools.

Testing was begun in the regular classroom setting, but after several students were tested, it was felt that classroom distractions were too numerous to allow the necessary attention to be given to the tasks. Therefore, special provisions were made for a quiet and secluded room where testing could be done in an atmosphere relatively free from distractions.

The tests were administered to each subject in the same order, (1) Peabody Picture Vocabulary Test, Form B, (2) Dolch Basic Sight Word Test, and (3) the Kagan Matching Familiar Figures Test. Scores on each of these tests were derived and recorded by the researcher.

Examination time for each subject averaged approximately twenty minutes.

In the administration and scoring of the Peabody Picture Vocabulary Test, Form B, the published examiner's manual was adhered to without deviation.

The Dolch Basic Sight Word Test was administered by having each subject read aloud from a laminated copy of the word list. Errors were recorded on individual answer sheets

by the examiner. Errors were noted as being (1) self-corrected without a cue from the examiner, (2) self-corrected when the examiner pointed to the word or verbally stated that the subject has mispronounced the word, therefore giving a cue to the examinee, (3) words which the subject just did not have at his command and could not read even after a cue from the examiner had been given. A notation was made as to the number of phonetic and the number of non-phonetic words which were errors of any of the types previously described.

The words which were designated as phonetic were those which followed a definite phoneme/grapheme relationship and could possibly be phonetically deciphered. Those words which did not follow a usual sound/symbol relationship in their composition were classified as non-phonetic. (See Appendix E.)

In the administration of the Kagan Matching Familiar Figures Test, each subject was given two practice samples which served to make clear the task. The subject had to look at a figure drawing and then select an identical figure from a group of six figure drawings in which only one was identical to the stimulus. A stop watch was used to record the subject's response latency time for the first response to each test item. A tabular record was kept of the responses made after the first response, if the first response was inaccurate. No response times were recorded after the initial response to a test item. There were twelve test

items on this instrument. For each subject, the average response time to the first response for each item and the average number of errors over the total number of responses were calculated.

The individual answer sheets for the three tests were assembled for each individual student.

TREATMENT OF THE DATA

The scores for each of the tests were calculated by the researcher for each of the examinees.

The published score sheet for Form B of the Peabody Picture Vocabulary Test was used to record responses to the test items and to calculate verbal intelligence quotient for each student.

The errors on the Dolch Basic Sight Word Test were classified and calculated in tabular form. The number of phonetic words and non-phonetic words which were errors of any type, were also listed.

The Kagan Matching Familiar Figures Test was administered to all students who scored above 90 on the Peabody Picture Vocabulary Test. As each of the 189 students who scored above 90 on the Peabody Picture Vocabulary Test were tested, records were kept as to the initial response latency time and the total number of errors made for all test items. The distribution of Matching Familiar Figures Test errors was split at the median (14.0) into high and low scores; the distribution of response latency time for the first response

to each test item was also split at the median (8.4 seconds) into fast and slow response latency. The students scoring above the median on errors and below the median on response time (many errors, fast response latency) were classified as impulsive. The students who scored below the median on errors and above the median on response time (few errors, slow response latency) were classified as reflective. There were some students who reacted to the Matching Familiar Figures Test with above average response time and below average number of errors. Conversely, there were those who responded very slowly and still made above the average number of errors. These students were not included in the sample. Only the 133 subjects who were specifically classified were included.

All data were recorded on IBM code sheets by the researcher and transferred to computer cards by the personnel in the Department of Experimental Statistics at Louisiana State University. The calculations were made by computer, using an analysis of variance, and were reported in print-out format.

Chapter 4

PRESENTATION AND ANALYSIS OF DATA

This chapter was designed to present and analyze all data concerning this research study. Basically, the significance of difference of mean scores, based on the errors made on the Dolch Basic Sight Word Test when compared between reflective and impulsive boys and girls was calculated.

The significant differences were calculated by the computer using an analysis of variance. Significant differences of mean scores were based on adjusted means to allow for unequal numbers among groups.

All differences of mean scores were submitted to tests of significance at the .05 level of confidence. In some comparisons, the significance was found at the .01 level of confidence.

The data presented in Table 2 indicate that when comparing all boys and all girls in the sample on the basis of the total number of errors made on the Dolch Basic Sight Word Test, there is a significant difference between the scores. The boys made significantly more errors than the girls.

Table 2

Difference Between Boys and Girls When Compared
on the Basis of Mean Scores of Total
Errors Made on the Dolch
Basic Sight Word Test

Sex	Mean	F	Probability
Male	17.57		
Female	9.01		
		6.7	.0107*

*Significant at the .05 level of confidence.

N = 133.

In Table 3, the data reveal the fact that when comparisons are made between total number of errors made by reflective and total number of errors made by impulsive students, there is no significant difference between mean scores.

Table 3

Differences Between Mean Scores of Reflective and
Impulsive Students When Compared on the Total
Errors Made on the Dolch Basic
Sight Word Test

Style	Mean	F	Probability
Reflective	11.35		
Impulsive	15.29		
		1.45	.23

In comparing reflective and impulsive boys and girls (sex-by-style differences) based on the total number of errors made on the Dolch Basic Sight Word Test, the analysis of the data showed that there is no significant effect caused by style or sex-by-style interaction. Therefore, all differences shown in the comparisons of these groups are sex differences.

The mean scores for total errors made by reflective and impulsive boys and girls are summarized in Table 4.

Table 4

Comparison of Mean Scores for Total Number of Errors Made on the Dolch Basic Sight Word Test by all Reflective Girls and Boys and All Impulsive Girls and Boys

Sex	Style		Means Adjusted for unequal numbers
	Impulsive	Reflective	
Male	13.7	9.0	17.6
Female	9.0	9.2	9.1
Means (Adjusted for unequal numbers)	11.4	15.3	
F		1.45	6.71
Probability		.231	.0107*

* $P < .05$.

N = 133.

The adjusted means of the reflective versus the impulsive students are 11.4 and 15.3, respectively, with a difference between the adjusted means being .231, which is

not statistically significant. ($P < .05$.)

The adjusted means of the boys versus the girls are 17.6 for boys and 9.1 for girls. The probability is calculated to be .0107 ($P < .05$). The boys show significantly more total errors than did the girls. There is no interaction due to style-by-sex.

Effect of cognitive style upon the number of errors made in non-phonetic words is shown in Table 5.

There is no significant difference between the performance of the reflective and the impulsive students when performance is based on the number of non-phonetic word errors made. The adjusted mean for the impulsive students is 2.74; for reflective students, 3.73. The statistical probability is 1.38, which is not statistically significant.

However, the analysis of data further revealed that there is a significant difference between the number of errors on non-phonetic words made by boys and girls. The adjusted means for boys is 4.19; for girls, 2.29. The probability is .0050, significant at the .01 level of confidence.

Style did not show significant effect upon performance of the group as a whole. However, there is one style-by-sex interaction. When comparing reflective and impulsive boys, impulsive boys made fewer errors on non-phonetic words (mean = 3.0), than reflective boys (mean = 5.38). There is a significant difference in these

scores ($F = 4.34$, probability = .0392 with $P < .05$). There is no significant difference between the mean scores for reflective girls (mean = 2.09) and impulsive girls (mean = 2.48).

Table 5

Mean Scores of Reflective and Impulsive Subject
When Compared on Number of Errors
on Non-phonetic Words

Style	Mean	F	Probability
Impulsive	2.47		
Reflective	3.73		
		2.22	.138

Table 6 summarizes the findings that compared the impulsive and reflective subjects on their performance of reading phonetic words as listed on the Dolch Basic Sight Word Test. No significant difference between the mean scores is found to exist between the reflective and impulsive subjects when compared on this basis.

Table 6

Mean Scores of Reflective and Impulsive Subjects
When Compared on Number of Errors on
Phonetic Words

Style	Mean	F	Probability
Impulsive	8.65		
Reflective	11.14		
		.81	.37

A comparison of performance of reflective and impulsive subjects when performance is based on the number of self-corrections made without a cue from the examiner is shown in Table 7. The reflective students made significantly more self-corrections without a cue from the examiner than did the impulsive students.

Table 7

Mean Scores of Reflective and Impulsive Subjects When
Compared on Number of Self-corrected Responses
Without a Cue from the Examiner

Style	Mean	F	Probability
Impulsive	10.00		
Reflective	20.03		
		228627.26	.0001**

**Significant at the .01 level of confidence.

N = 133.

Differences between mean scores of the reflective and the impulsive students when compared on the basis of the number of self-corrected responses with a cue from the examiner are listed in Table 8. No significant difference between the mean scores of the two groups exists.

Table 8

Mean Scores of Reflective and Impulsive Subjects
When Compared on Number of Self-corrected
Responses with a Cue from the Examiner

Style	Mean	F	Probability
Impulsive	5.36		
Reflective	5.61		
		.08	.78

Further analysis showed that when sexes are compared on the number of errors which were self-corrected with a cue from the examiner, the mean for boys is 7.05 and for girls, 3.92. The probability is statistically stated as .0006 ($P < .01$). Sex, then, is a significant factor in this comparison, with the boys showing more errors in this category than the girls.

There were some subjects, both reflective and impulsive, who were unable to pronounce some of the words on the Dolch Basic Sight Word Test, even with a cue from the examiner being given.

The data in Table 9 summarizes the mean scores made by the reflective and the impulsive students when based on the number of words which could not be read, even after the examiner had given a cue. The cognitive style does not act as a factor in this comparison as there is no significant difference between those children classified as reflective and those classified as impulsive.

Table 9

Mean Scores of Reflective and Impulsive Subjects
When Compared on Number of Words
Which Could Not be Read

Style	Mean	F	Probability
Impulsive	4.10		
Reflective	7.23		
		1.16	.28

A summary of the data presented in Tables 2-9, revealed the following:

1. Boys made significantly more errors on the Dolch Basic Sight Word Test than did the girls. The difference was expressed as $F = .0107$, $P < .05$.

2. There was no significant difference between the total number of errors made by reflective subjects as compared to the total errors made by impulsive subjects.

3. No sex-by-style interaction was found to exist when total mean scores were compared in all possible combinations of reflective and impulsive boys and girls.

4. There was no significant difference in the number of errors on non-phonetic words as scored by the reflective as compared to the scores of the impulsive subjects. Again, sex played a prominent role in differences of performance. The boys made significantly more errors than the girls ($F = .0050$, $P < .01$).

In the category of errors on non-phonetic words, style was a factor, but depended on sex. For boys, cognitive style was a factor, but not for girls.

5. When compared on the basis of number of errors made in reading phonetic words from the Dolch Basic Sight Word Test, no significant difference was found to exist between the mean scores of the reflective and impulsive students.

6. On the number of self-corrected errors without a cue from the examiner, the reflective students scored significantly higher than the impulsive students. The probability was expressed as $F = 228627.26$, Probability = .0001.

7. No significant difference was found to exist between the mean scores of the reflective and impulsive students when compared on the basis of the number of self-corrected responses with a cue from the examiner. However, a specific comparison of the sexes on this basis revealed

that the boys made more errors of this type (mean = 7.05) than did the girls (mean = 3.92). A probability of .0006 ($P < .01$) was shown.

8. Cognitive style did not act as a factor in the performance of reflective students (mean = 4.10) and impulsive students (mean = 7.23) when performance was based on the number of words on the Dolch Basic Sight Word Test which could not be read, even after a cue from the examiner was given.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

The purpose of this study was to determine what effect, if any, a reflective or impulsive cognitive style would have on the number and kinds of errors made on the Dolch Basic Sight Word Test.

The study was limited to a sample of fourth grade boys and girls who were attending schools which were not designated as culturally disadvantaged. None of the sample population had repeated any grade, all were of average or above average verbal intelligence, and all exhibited a specific cognitive style--either impulsive or reflective.

Three tests were administered on an individual student basis by the researcher. The Peabody Picture Vocabulary Test, Form B, to assess the verbal intelligence level of the subjects, the Dolch Basic Sight Word Test from which oral reading errors were tabulated, and the Kagan Matching Familiar Figures Test for the determination of cognitive style. An average of twenty minutes testing time per child was experienced.

The results of the Dolch Basic Sight Word Test and

the Kagan Matching Familiar Figures Test composed the data used in the study. Statistical analysis using an analysis of variance was performed by the computer in order to assign differences of mean scores to the following groups when comparisons were made on the basis of the total number of errors on the Dolch Basic Sight Word Test: (1) boys and girls, (2) reflective students and impulsive students, and (3) all combinations of reflective and impulsive boys and girls.

Differences in mean scores of reflective and impulsive students were also found when errors on the Dolch Basic Sight Word Test were categorized as (1) self-corrected errors without a cue from the examiner, (2) self-corrected errors with a cue from the examiner, and (3) unable to correct, even with a cue from the examiner.

The significance of difference was tested on the .05 level of confidence in most cases, and at the .01 level in some cases.

CONCLUSIONS

From the data compiled within the limitations of this study, the following conclusions may be drawn:

1. Sex differences seemed to play a much more significant role in the total number of oral reading errors made on the Dolch Basic Sight Word Test than did differences in cognitive style. Boys made more errors than girls.

2. There was no sex-by-style interaction shown when

groups were compared on the basis of total oral reading errors on the Dolch Basic Sight Word Test.

3. Cognitive style was a significant factor in the number of oral reading errors categorized as self-corrections without a cue from the examiner. The reflective student made almost twice as many self-corrections without a cue from the examiner as did the impulsive student.

4. In comparing the mean scores of the reflective and impulsive students when based on the number of errors corrected with a cue from the examiner, as well as the number of words which could not be read even with a cue from the examiner, it was indicated that cognitive style did not act as a causative factor for performance.

5. When considering the errors made on the phonetic words from the Dolch Basic Sight Word Test, it was found that there was no significant difference between the performance of the reflective and the impulsive student.

6. When comparisons were made on the number of errors made on the non-phonetic words from the Dolch Basic Sight Word Test, there was some sex-by-style interaction shown. Impulsive boys made fewer errors than reflective boys. No significant difference was shown between the performances of the reflective and impulsive girls.

RECOMMENDATIONS

1. Studies should be continued to investigate the significance of reflective-impulsive cognitive style as a

causative factor of oral reading errors both in reading isolated words presented in lists and in reading meaningful, textual materials.

2. Future studies could be more expedient if a measure of cognitive style were standardized for the sexes and various age levels.

3. Further studies should be conducted with children from disadvantaged locales and their performances compared with those as found in advantaged settings.

4. The relevance of cognitive style should be made known to the classroom teacher and efforts should be made to consider cognitive style and its role in children's reactions when the instruction for individual children is being formulated.

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APPENDIXES

APPENDIX A

LETTER OF PERMISSION TO CONDUCT THE STUDY

East Baton Rouge Parish School Board
Robert J. Aertker, Superintendent
P. O. Box 2950
Baton Rouge, Louisiana 70821

March 7, 1975

Mrs. Alta Palmer
1212 South Acadian Thruway
Baton Rouge, Louisiana

Dear Mrs. Palmer:

Your request to conduct testing in the following schools
has been approved:

Winbourne Elementary School
Dalton Elementary School
Lanier Elementary School
Park Forest Elementary School

Please contact the principal of each school and explain
your programs prior to contacting teachers. We are pleased
to work with you on this project and would appreciate
receiving a copy of your findings.

Sincerely yours,

/s/ Lorin V. Smiley
Lorin V. Smiley
Assistant Superintendent

LVS:SRC

APPENDIX B

PARTICIPATING SCHOOLS, PRINCIPALS, AND FOURTH GRADE CLASSES

Lanier Elementary School

Mr. James M. Crane, Principal

Classes:

Mrs. Dorothy C. Mire
Mrs. Doris Campbell
Mrs. Dorothy Alexander

Park Forest Elementary School

Mr. Adam Gautreau, Principal

Classes:

Mrs. Karen Cross
Mrs. Rebecca Cowart
Mrs. Nadine Jenkins

Winbourne Elementary School

Dr. Evelyn Conerly, Principal

Classes:

Miss Betty Ford
Mrs. Sue Rodriguez

Dalton Elementary School

Mr. Robert Meador, Principal

Classes:

Mrs. Alma Christof
Mrs. Connie Huggins

APPENDIX C

THE BASIC SIGHT WORD TEST. PART 1

Name _____ Date _____ No. _____

1. by at a it
2. in I be big
3. did good do go
4. all are any an
5. had have him drink
6. its is into if
7. ask may as am
8. many cut keep know
9. does goes going and
10. has he his far
11. but jump just buy
12. black kind blue find
13. fast first ate eat
14. help hot both hold
15. grown grow bring green
16. four every found eight
17. from make for made
18. around funny always because
19. long let little look

- 20. away again after about
- 21. cold can could clean
- 22. full fall five fly
- 23. before best better been
- 24. live like laugh light
- 25. her here how hurt
- 26. down done draw don't
- 27. give get gave got
- 28. came carry call come

APPENDIX D

THE BASIC SIGHT WORD TEST. PART 2

Name _____ Date _____

1. sit me to the
2. not of we so
3. red too seven walk
4. six start show stop
5. put round right pull
6. no on or old
7. yellow you your yes
8. please pick play pretty
9. take ten they today
10. my much must together
11. own under off over
12. out new now our
13. open one only once
14. try myself never two
15. us up upon use
16. with white was wash
17. shall she sleep small
18. who write would why
19. some very sing soon

- 20. wish well work will
- 21. ran read run ride
- 22. then tell their them
- 23. see saw say said
- 24. that there these three
- 25. when which where what
- 26. thank those this think
- 27. want went were warm

APPENDIX E

NON-PHONETIC WORDS FROM THE DOLCH BASIC SIGHT WORD TEST

to of too walk
on you your they
one only once two
was wash small who
would some work their
said there where what
want were do all
are have into does
buy kind find both
hold four eight from
always because could fall
been laugh done don't
give call come

APPENDIX F

DIRECTIONS FOR MATCHING FAMILIAR FIGURES TEST

"I am going to show you a picture of something and then some pictures that look like it. You will have to point to the picture on this bottom page (point) that is just like the one on this top page (point). Let's do some for practice." E shows practice items and helps the child to find the correct answer. "Now we are going to do some that are a little bit harder. You will see a picture on top and six pictures on the bottom. Find the one that is just like the one on top and point to it."

E will record latency to first response, total number of errors for each item and the order in which the errors were made. If S is correct, E will praise. If wrong E will say, "No, that is not the right one. Find the one that is just like this one (point)." With a second or later mistake, say, "Hm-m, it does look very much like it, but there is one even more like it. Find the one that is just like this one (point)." Continue to code responses (not times) until child makes a maximum of six errors or gets the item correct. If incorrect E will show the right answer.

The test should be set up in a notebook. It is

necessary to have a stand to place the book on so that both the stimulus and the alternatives are clearly visible to the S at the same time. The two pages should be practically at right angles to one another. Note: It is desirable to insert the pages in clear plastic which helps to keep the pages clean.

The Matching Familiar Figures Test is scored by determining the average time to the first selection of a response and the total number of errors across the twelve items. Each child whose average response time is above the median of the groups and whose number of errors is below the median of the group is classified as reflective. Each child whose average response time is below the median of the group and whose number of errors is above the median of the group is classified as impulsive.

APPENDIX G

SAMPLE ITEMS FROM MATCHING FAMILIAR FIGURES TEST



APPENDIX H

SCORE SHEET FOR MATCHING FAMILIAR FIGURES TEST

Name _____ Sex _____ Date _____
 School _____ Grade _____ Birthdate _____
 Age _____
 Examiner _____

MATCHING FAMILIAR FIGURES

Item	Latency for 1st response	I	II	III	IV	V	VI
A. Cup					x		
B. Ruler							x
1. House		x					
2. Scissors							x
3. Phone				x			
4. Bear		x					
5. Tree			x				
6. Leaf							x
7. Cat				x			
8. Dress						x	
9. Giraffe					x		
10. Lamp						x	
11. Boat			x				
12. Cowboy					x		

x indicates correct answer.

Record the order of responses by placing a 1 in the cell by the first response, a 2 by the second response, etc.

Average response time to items _____

Number of errors made _____

VITA

Alta Britton Palmer was born on June 14, 1935, in Yazoo City, Mississippi. Her family moved to Baton Rouge, Louisiana, in 1938. She attended elementary and secondary schools in that city, and graduated from Istrouma High School in 1953. In 1957, she received the Bachelor of Science Degree and in 1959, the Master of Education Degree from Louisiana State University.

She was employed as a classroom teacher in the upper elementary grades in the East Baton Rouge Parish School system from 1957 until 1972. She also served as consultant and supervisor for teacher education programs for teachers of reading in the St. Landry Parish School system. She has served as Helping Teacher in the Title I Reading Programs and consultant to East Baton Rouge Parish Schools. She has also been a consultant for a major publishing company and the Louisiana State Department of Education.

In 1970, she became the co-director of the Baton Rouge Reading Clinic, a private institution specializing in the diagnosis and remediation of reading disabilities in school age and young adult students.

She is married to Alvin Carroll Palmer, Jr., and is

the mother of four children: Laura Jean, age eighteen; Pamela Joan, age fifteen; William Alvin, age fourteen; and James Britton, age ten.

EXAMINATION AND THESIS REPORT

Candidate: Alta Britton Palmer

Major Field: Education

Title of Thesis: IMPULSIVE-REFLECTIVE COGNITIVE STYLE AS A FACTOR INFLUENCING
PERFORMANCE ON THE DOLCH BASIC SIGHT WORD TEST

Approved:

Eric L. Thurston

Major Professor and Chairman

James K. Traylor

Dean of the Graduate School

EXAMINING COMMITTEE:

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Date of Examination:

April 10, 1975